

ABSTRACT OF THE DISCLOSURE

The invention provides a method and apparatus for producing nitrogen trifluoride. The invention involves passing a working fluid through a heat engine cycle and using the mechanical energy generated by the working fluid to produce sufficient mixing intensity within a nitrogen trifluoride reactor. The method utilizes a
5 working fluid vapor jet, such as a hydrogen fluoride vapor jet, to impart sufficient energy to the mixing zone of a reactor in order to disperse gaseous fluorine within a liquid ammonium acid fluoride melt. A gaseous reaction product stream is removed from the reactor, the reaction product stream comprising nitrogen trifluoride and a working fluid vapor. The working fluid is then separated from the nitrogen trifluoride
10 and recycled for reuse in the process, thereby completing a heat engine cycle.